A Population-Based, Risk-Adjusted Model for Forecasting Psychological Health Provider Workforce Needs

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Outline

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Introduction

- Psychological stresses of current operations in Iraq and Afghanistan
- Need to assure adequate workforce to meet psychological healthcare requirements of service members, their families, and other beneficiaries eligible to receive care through Defense Health Plan (DHP)
  - Under new vision of providing this care
- Congress and Department of Defense (DoD) interested in knowing adequacy of current workforce resources
- DoD and Service medical departments need tool to assist workforce planning
- Resulted in creation of PHRAMS

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What is PHRAMS?

- The **P**sychological **H**ealth **R**isk-**A**djusted **M**odel for **S**taffing
- Major attributes:
  - Population-based
  - Risk-adjusted
  - Scalable/modifiable
- Produces projections of:
  - Required number and mix of providers (staffing requirements)
  - To meet annual needs for psychological health services
  - Of all 9.3M Defense Health Plan (DHP) beneficiaries
- Planning and modeling tool
  - User application with modifiable “soft-wired” parameters
  - Can be annually updated
    - Refresh data and update trends

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What does PHRAMS produce?

- Annual projected staffing requirements
  - Projects over a six-year planning horizon
  - Projects staffing requirement by provider type
    - Mental health specialties, primary care, others
    - Projections take into account expected productivity
- Standard reports
  - Longitudinal and Year 1
    - Year 1 reports include a “gap analysis”
  - Can use default values for parameters or modify them for modeling purposes
  - Can select level of aggregation
    - Primary planning units or aggregations of units up to system-wide
  - One branch of Service or all branches

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Approach to developing PHRAMS

- Reviewed literature and existing staffing models
  - Both military and civilian models
- Conducted key informant interviews
  - Clinical, workforce, and management staff
- Analysis of prevalence and utilization by risk-adjusted populations of DHP beneficiaries
  - Grouped by demographic and military-related attributes
    - Age, gender, residence, type of plan enrolled in, beneficiary category, rank group (SES), Branch of Service,
    - Deployment history/exposure to deployment stress (and trends)
  - Prevalence and utilization trend lines and projections
- Extensive input from working group of end users

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PHRAMS overview

- Total staffing requirement =
  - Encounter based + non-encounter based requirements
- Encounter based requirement =
  - Expected encounters / productivity
- Expected encounters =
  - $\sum_{i,\,j}$ (population_{i} * $\text{prevalence}_{i,\,j}$ * $\text{encounter rate}_{j}$)
    - Where ***i*** = risk group and ***j*** = psychological health diagnosis group
  - Encounters allocated to provider type
  - Encounters can be directly provided or purchased
- Non-encounter based requirement =
  - Enrollee-based + structural unit + support staff requirements
  - Allocated to provider type for “direct care” sector only

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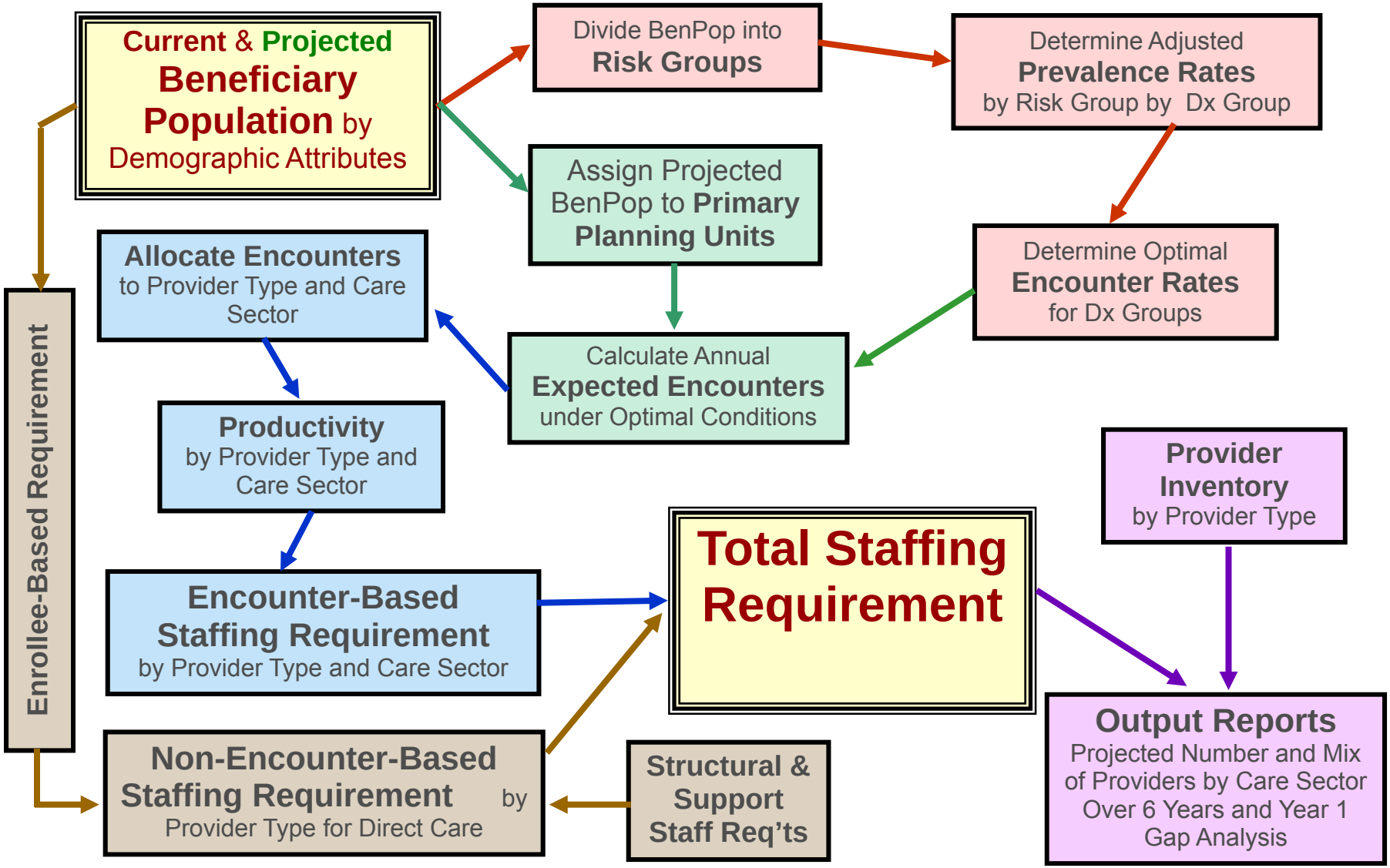
PHRAMS Flow diagram



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PHRAMS user application

- CD-based MS Access application with users guide
  - Select the required “report parameters”
    - Service
    - Planning unit level
    - Type of report
  - Accept or edit (modify) soft parameter default values
    - Prevalence rate adjustment for untreated prevalence
    - Percentage distribution in deployment history groups
    - Provider productivity metrics
      - Annual hours available for providing care
      - Encounters per hour
    - Percentage of encounters apportioned to direct and purchased care
    - Percentage of direct care providers who are civilians

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Principal findings

- PHRAMS performed as expected and produced usable and realistic results
- End users were able to use the application for planning
- Sensitivity analysis revealed key drivers of staffing needs
  - Analysis focused on direct care requirements (not purchased care)
  - PHRAMS projected requirements most sensitive to:
    - Population growth projections
    - Treated prevalence projections
    - Provider productivity
    - “Make-or-buy” decisions or policies
      - Provide care directly or purchase it

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Conclusions and implications

- Possible to create a usable model to project psychological health workforce requirements using administrative & medical records and input from end users
- Such models can be used to respond to planning and policy analysis needs
  - Can be used by such entities as integrated delivery systems, accountable care organizations, managed care organizations, government healthcare workforce policy agencies, and provider specialty societies
  - Can be used for workforce planning, provider recruitment, identification of gaps in current workforce and workforce shortage areas, workforce policy analysis, make-or-buy (provide-or-purchase) decisions

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Questions

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- Contact information

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